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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,838	05/18/2005	Emil Edwin	0001885USU/3053	3864

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EXAMINER

PRICE, CARL D

ART UNIT PAPER NUMBER

3749

DATE MAILED: 11/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/510,838

Applicant(s)

EDWIN ET AL.

Examiner

CARL D. PRICE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2006 (Figures 1 and 3) is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 1 and 24 have been considered but are moot in view of the new ground(s) of rejection.

Applicant has amended the claims to be of a scope not previously considered. Consistent with applicant's argument that the prior art relied on in the previous office action fail to show, disclose and/or teach certain aspects of applicant's invention now recited in the claims filed on **08/18/2006**, applicant has amended the claims to include for example the following:

Claim 1 (CURRENTLY AMENDED)

A method of viewing the flame produced by a burner in a pyrolysis section of a petroleum cracker furnace, wherein the fuel burnt by the burner is natural gas, comprising viewing the flame through an interference filter adapted to pass light of the wavelength of sodium only.

The Replacement drawing Figure 1 and new Figure 3 have not been approved as they fail to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Reference characters 14 and 16 (Figure 1). Reference character 20 (Figure 3).

The Replacement drawing Figure 2 has been approved.

Newly added drawing Figure 3 has not been approved as it introduces new matter. See below.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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The Examiner maintain the position that **US004616137 (Goff et al.)** clearly teaches the person having ordinary skill in the art that, in optical monitoring systems and more specifically to optical monitoring systems for enhancing combustion spectroscopy, that it is known and advantageous to reduce the interference caused by background radiation. In this regard **US004616137 (Goff et al.)** discloses:

(4) The light gathered by the branch 15 is directed through a lens onto a first filter 23. Filter 23 is a bandpass dichroic interference filter **centered at a wavelength corresponding to the emission line being monitored**, in this case centered at a wavelength of 589 nm to correspond to **the sodium D-line wavelength**. The filter 23 bandwidth, full-width half maximum (FWHM), is about 3 nm. Thus, the light with wavelengths from about 588 nm to 591 nm is transmitted by the filter to a first optical detector 25, such as a photodiode, which generates an output signal proportional to the total light power transmitted. FIG. 4 shows the typical sensitivity of the first detector (25) to the input light. The output of detector 25, therefore, consists primarily of **the sodium D-line emission plus any corresponding frequency background radiation**, which may be rather significant at high temperatures.

(5) The light that hits the first filter 23 **outside** the 588 nm to 591 nm region is reflected back into the optical fiber common trunk portion 19 through focusing lens 21 and divided between the incoming branch 15 and the second branch 27 of the bifurcated cable 17. A second detector 29 is disposed to view the reflected portion of the light passing through a focusing lens 31 and a second filter 33 from the optical cable branch 27. Filter 33 is also a bandpass dichroic interference filter with a center wavelength of 589 nm, but with a bandpass width of 10 nm FWHM. FIG. 5 shows the net response of detector 29 to input light. The response yields two bandpass regions from 585 nm to 588 nm and 591 nm to 595 nm. Thus, the second detector is blind to the sodium D-line but sees the background radiation levels on both sides of the D-line, which also is representative of the undesired background component present in the output of the first detector (25). **This undesirable blackbody radiation component is cancelled out of the first detector signal by obtaining the difference of the two detector outputs** (No. 1 minus No. 2) in a differencing circuit, such as an instrument amplifier 35 having separate positive and negative inputs connected respectively to the outputs of detectors 25 and 29 through separate variable gain amplifiers 39 and 41, respectively. Thus, the output of amplifier 35 with appropriate gain adjustments, **is a signal whose amplitude is proportional to the sodium D-line emissions of the flame in combustor 7.** This output may be displayed on an appropriately calibrated voltmeter 37 connected to the output of amplifier 35 or used as a process control signal in the combustor coal feed system. for example.

Specification

The amendment filed **08/18/2006** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

The particular arrangement of elements illustrated in Figure 3 including, and not limited to, the use of a bar oriented at the particular orientation and location shown, the manner in which the relay connects to the bar, and the particular location of the filter (24).

With regard to the amendments made to the specification, new matter is added by inclusion of the recitation(s) include(s), and not limited to:

- 1) "This would clearly be advantageous in a large scale refinery or similar scale production plant where considerable numbers of personnel would be required to monitor the operation of each furnace in situ.";
- 2) "It will be appreciated that the furnace 1 would normally include a plurality of burners and, in the case of a petroleum cracker, ten or more burners could be provided. Thus if necessary, the camera 22 could be programmed to move along a row of burners and to take several pictures of respective burners or groups thereof. Camera 22 is arranged inside the furnace and adapted to photograph the burner flame at regular intervals."; and
- 3) "Means 21 and means 25 are controllers commonly known in the art for controlling, monitoring and processing information. Camera 22 is programmed to photograph the burner about once every 10 minutes using means 21. Camera 22 is programmed to move along a row of burners and to photograph groups of one or more burner flames in turn. The means for camera 22 to move along row of burners is a bar in combination with any commonly used motive force used for such purposes.

(Underlining Added)

Applicant is required to cancel the new matter in the reply to this Office Action. rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following must be shown or the feature(s) canceled from the claim(s):

- pyrolysis section of a petroleum cracker (e.g. - claims 1);
- the interference filter provided a s panel attached to the window of a furnace (claims 6, 16);
- the panel hinged to the furnace (claim 7);
- a camera arranged inside the furnace (claims 9, 19);
- programmed means to photograph the burner wherein the camera at regular intervals, such as about once every 10 minutes (claims 9, 11, 19, 21);
- means for relying the information from the camera (claims 10, 20)
means and manner of arranging a programmed camera to move along a row of burners and to photograph groups of one or more burner flames in turn (claims 12, 22).

No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

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even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9, 10, 11, 19, 20 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Subject matter which was not described in the specification, for example, includes:

- Programmed means to photograph the burner wherein the camera at regular intervals, such as about once every 10 minutes (claims 9, 11, 19, 21);
- Means for relying the information from the camera (claims 10, 20)
- Means and manner of arranging a programmed camera to move along a row of burners and to photograph groups of one or more burner flames in turn (claims 12, 22); and
- a camera arranged inside the furnace (claims 9, 19).

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims: Rejected under 35 U.S.C. 103(a)

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **US005249954 (Allen et al)** in view of **US004616137 (Goff et al.)**.

US005249954 (Allen et al) shows and discloses a method and apparatus for viewing a flame including:

- wherein the fuel burnt by the burner is natural gas (see column 1, lines 10-20); and
- viewing the flame through an interference filter (column 2, line 18)) adapted to pass light of a desired the wavelength.

US005249954 (Allen et al) shows and discloses the invention substantially as set forth in the claims with possible exception to:

- optical filtering means in the wavelength of sodium only.

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US004616137 (Goff et al.) teaches, from applicant's same combustion monitoring field of endeavor, an apparatus and method of viewing the flame produced by a burner in a furnace, including:

US004616137 (Goff et al.) shows (figures 3-5) and discloses the following:

14) This obviously becomes a very nonlinear function; however, as $d.\lambda$ is made very small, a linear function becomes an acceptable approximation. FIG. 2 shows a plot of a small region of the blackbody spectral radiance as defined by Equation 1. This plot represents a blackbody at 2,000.degree. F. over a wavelength range of 585 nm to 595 nm. It can be seen that little deviation from a linear relationship is present. Performing a linear regression on this data yields a worst case deviation of 0.35 percent from a linear fit over the range 585 nm to 595 nm.

(15) Now if, for instance, one desires to observe sodium D-line emissions at 589.0 nm and 589.6 nm, the combined emissions and blackbody spectral radiance would resemble the plot shown in FIG. 3.

In regard to claims 1-24 for the purpose of permitting optical monitoring and observation of the furnace flame in the spectral radiance emissions at 589.0 nm and 589.6 nm, it would have been obvious to a person having ordinary skill in the art at the time of applicant's invention to modify the **US005249954 (Allen et al)** to include optical filtering means in the wavelength of sodium only, in view of the teaching of **US004616137 (Goff et al.)**, such as in a furnace operating with a carbon containing fuel source (i.e. – natural gas).

In regard to claims 2 and 3, Official Notice is taken that it is well known and necessary to monitor and/or otherwise view and observe the characteristics of flames in all types of combustion and reactor processes including the pyrolysis section of a petroleum crackers. And, in regard to claim 3, Official Notice is taken that it is known to combust mixtures of hydrogen, methane and air (see for example US004242105). Therefore, in view of that which is well known in the combustion field of endeavor, it would have been obvious to a person having ordinary skill in the art to apply the **US005249954 (Allen et al)** method of flame viewing to the pyrolysis

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section of a petroleum cracker and to monitoring combustion of mixtures of hydrogen, methane and air.

With regard to claims 4, 5, 14, 15, 16 and 17, Official Notice is taken that it is well known to provide furnace walls with observation windows and it is well known that quartz is transparent and has high temperature heat resistant properties and is known to be used for optical elements and viewing windows in furnaces. Therefore, in view of that which is well known, it would have been obvious to a person having ordinary skill in the art to form **US005249954 (Allen et al)** with a wall mounted quartz window as claimed (see for example: US004616137 (Goff et al.) US003594746 and US004612908).

In regard to claims 8, 18 and 24, Official Notice is taken that it is well known to view flames through protective glasses or goggles (e.g.- in order to view a working surface it is necessary for torch operators use filtered glass goggles and glasses). Thus, in view of that which is well known it would have been obvious to a person having ordinary skill in the art for a furnace operator to not only use the automated flame viewing method of **US005249954 (Allen et al)**, as modified by **US004616137 (Goff et al.)** herein above, but to apply the teaching of **US004616137 (Goff et al.)** to known glasses or goggles to permit an operator direct viewing of a flame.

In regard to claim 7, Official Notice is taken that it is well known to hingedly mount glass observation panels to furnace wall openings for the purpose of selectively positioning the glass panel over the opening. Thus, in view of that which is well known and for the known purpose, it would have been obvious to a person having ordinary skill in the art to selectively hingedly mount the observation filter of **US005249954 (Allen et al)** so it can be placed over the window or removed by a user as required.

In regard to claims 9, 11, 19 and 21, since the location of the camera and frequency of monitoring a given flame would necessarily depend on a variety of design concerns and/or parameters, such as the over all shape and size of the apparatus, availability and cost of

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materials, the type and amount of fuel used, etc., to modify the **US005249954 (Allen et al)** method and apparatus to in accordance with the limitations set forth in these claims (i.e. – the camera arranged inside the furnace and the camera is programmed to photograph the burner about once every 10 minutes) can be viewed as nothing more that merely matters of choice in design, absent the showing of any new or unexpected results produced therefrom over the prior art of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

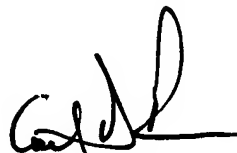
USPTO CUSTOMER CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CARL D. PRICE** whose telephone number is (571) 272-4880. The examiner can normally be reached on Monday through Friday between 6:30am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Josiah Cocks** can be reached on (571) 272-4874. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'Carl D. Price', with a stylized, cursive script.

CARL D. PRICE

Primary Examiner

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CP

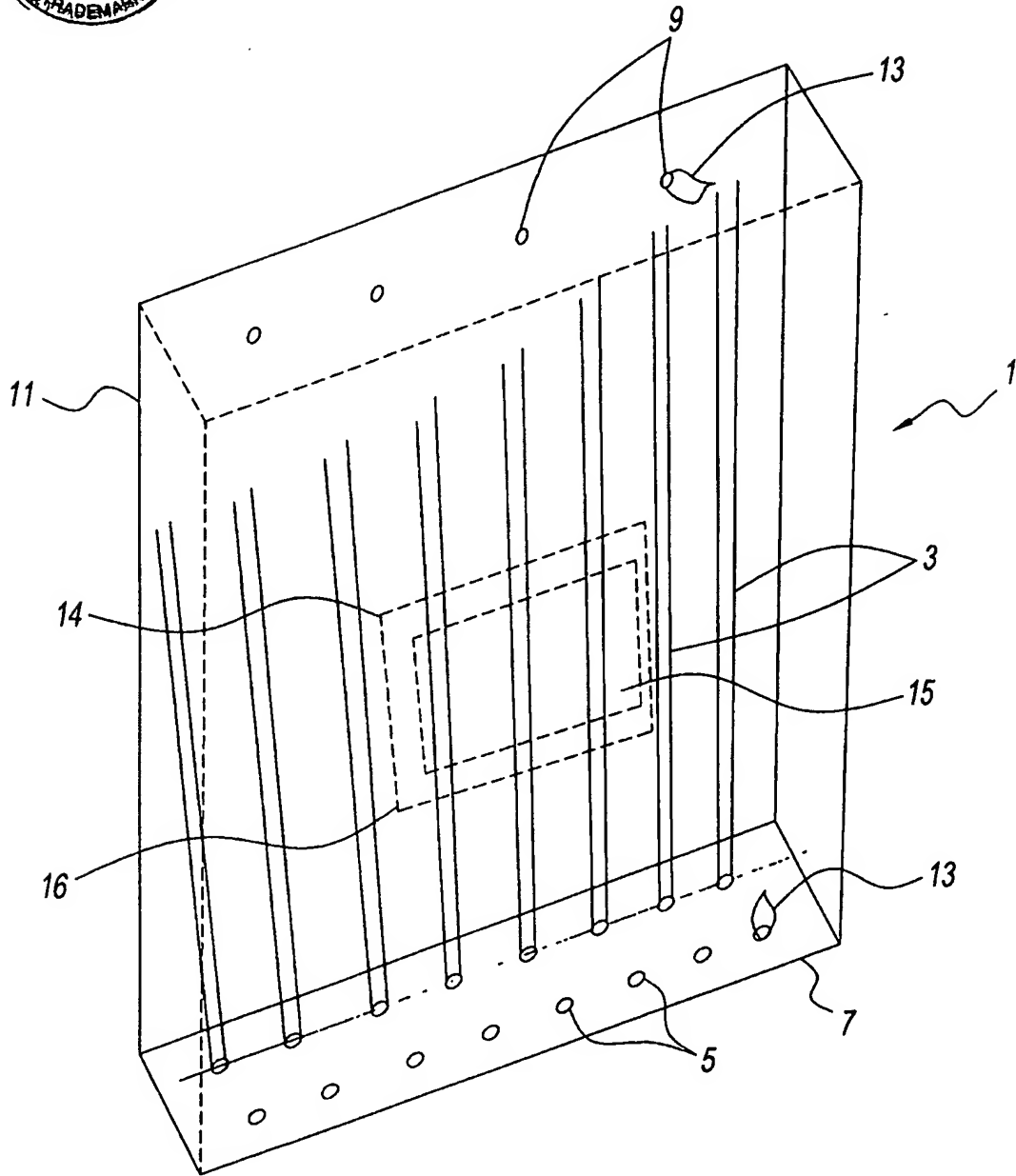


Fig. 1

NOT
Approved
of
Reference 10/24/06
NUMERALS 14, 16
missing in
spec.

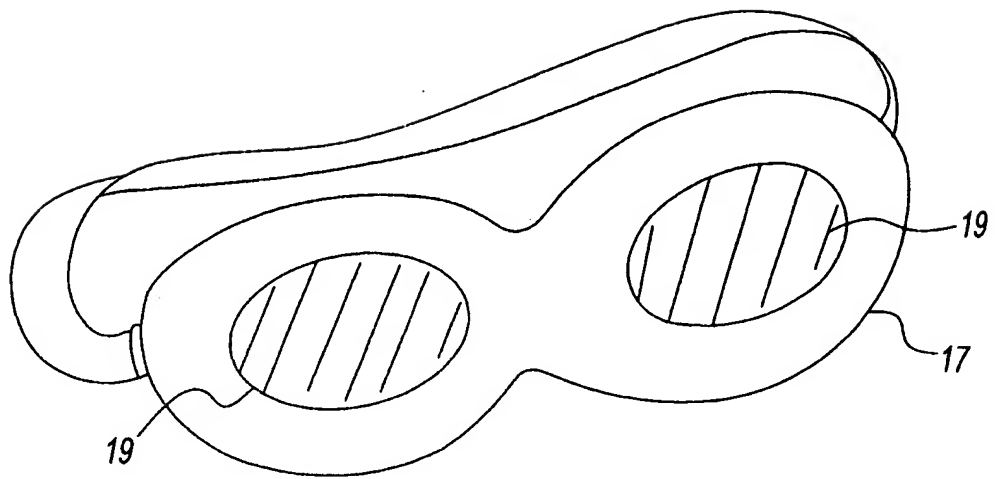


Fig. 2

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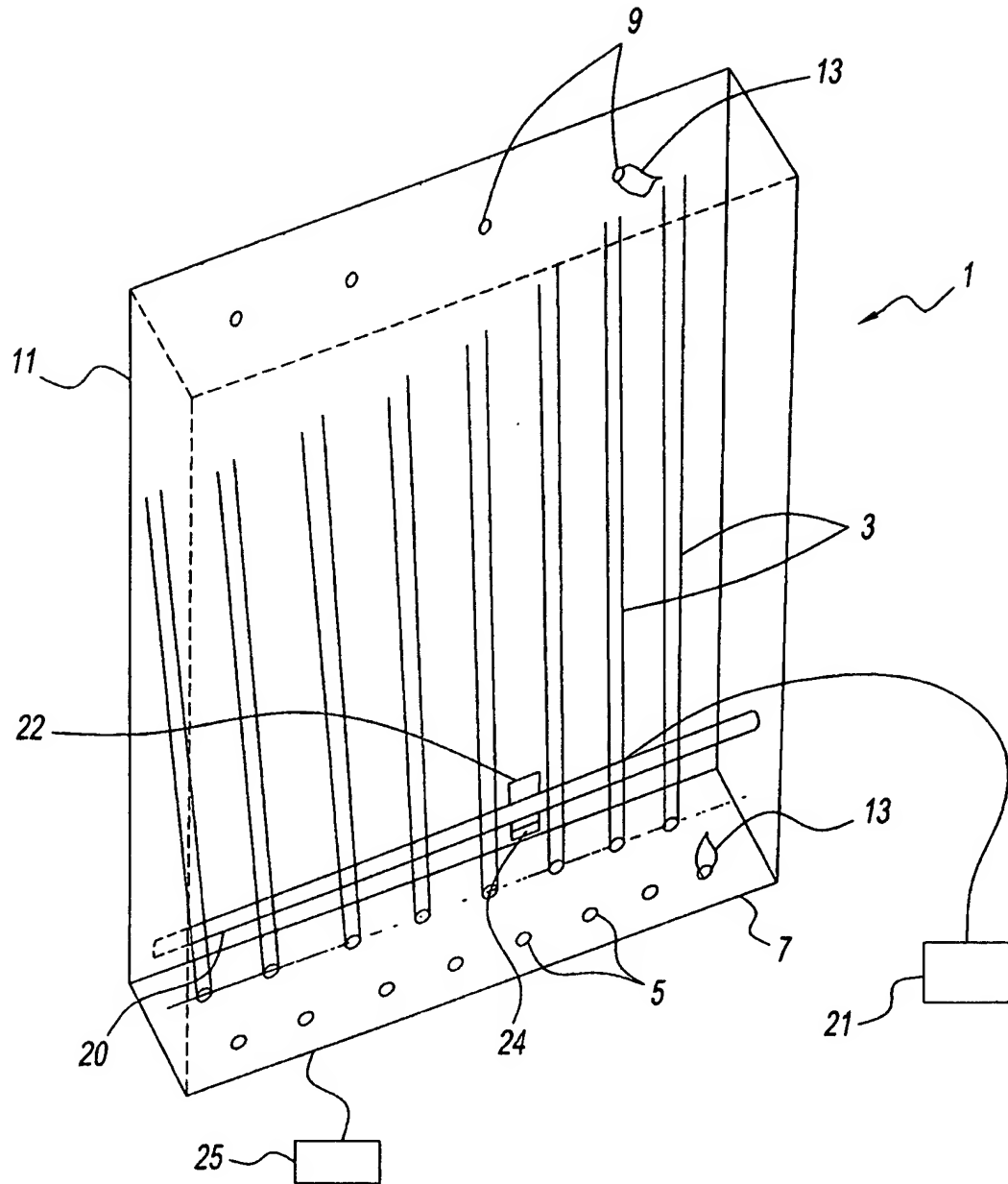


Fig. 3

NOT APPROVED
10/24/02
NEW MATTER